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# NORTH CAROLINA

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RM

Burnham Service Corporation

NCD986171072 #5231

Preliminary Assessment

March 1990

By: Pat DeRosa  
Environmental Chemist  
Superfund Section  
Division of Solid Waste Management



State of North Carolina  
Department of Environment, Health, and Natural Resources  
Division of Solid Waste Management  
P.O. Box 27687 · Raleigh, North Carolina 27611-7687

James G. Martin, Governor  
William W. Cobey, Jr., Secretary

William L. Meyer  
Director

March 27, 1990

Mr. Robert Morris  
EPA NC CERCLA Project Officer  
EPA Region IV Waste Division  
345 Courtland Street, NE  
Atlanta, GA 30365

Dear Mr. Morris:

SUBJECT: Preliminary Assessment Report  
Burnham Service Corp.  
Research Triangle Park, Durham County, NC  
NCD 986 171 072

The NC Superfund Section has investigated the site titled Burnham Service Corporation and prepared this preliminary assessment for your review.

The Burnham Service Corporation is located at 3211 Miami Boulevard in the Research Triangle Park, NC. In October 1988, a Region IV FIT investigation named the Burnham Service Corporation among others as possibly responsible for a contaminated private well located on Miami Boulevard (Ref.1).

The Burnham Service Corporation is a commercial moving and storage warehouse, used primarily for warehousing materials in transit. The facility was built in 1980 by the Burnham Corporation and began operations in 1982. No hazardous materials of any type have been kept on the property, nor are they allowed on the property (Ref.2). The facility was most likely listed as a potential responsible party because of its proximity to the contaminated well.

The private well was found to contain various organic contaminants, including 1,1,1-Trichloroethane at a concentration of 286 parts per billion (Ref.1). This compound is a colorless liquid, insoluble in water, widely used as a solvent for cleaning and degreasing metals. It is described as moderately toxic by ingestion (Ref.2).

Mr. Morris  
Burnham Serv. Corp.  
Page 2

The IBM facility in the Research Triangle Park is presently remediating a groundwater plume on their property of similar contaminants, and is also located near the contaminated well. IBM has shown a high probability the contamination in the private well did not originate from their property (Ref.3). This determination was made using hydrogeological data which indicates a groundwater gradient on the IBM property from the north (away from the private well), as well as sampling results from monitoring wells located between the IBM plume and the private well which show no contamination. IBM also reports additional contamination on their property which they have established as a separate plume of unknown origin (Ref.3).

Due to the fact that this facility has never had any hazardous waste on its property, and being that this facility has a very low probability of being responsible for the contamination of the private well, this site is recommended for No Further Action. If you have any questions, please call me at (919) 733-2801.

Sincerely,



Pat DeRosa,  
Environmental Chemist  
NC Superfund Section



Martin Richmond  
Environmental Chemist Trainee  
NC Superfund Section

PD/mr/Burnham

## PRELIMINARY ASSESSMENT

Burnham Service Corporation  
NCD 986171072

### REFERENCES

1. Letter to Mr. Narindar Kumar, EPA Region IV, from Phillip Henderson, NUS Corporation, Site Discovery Work, January 10, 1989.
2. Memo to file, from Martin Richmond, NC Superfund Section, Site Information; Burnham Service Corporation, NCD 986171072, March 22, 1990.
3. Draft RCRA Facility Investigation Report: M-Area Investigation, IBM Corporation, Research Triangle Park, NC, July 11, 1988.
4. USGS 7.5 Minute Topographic Map, Cary Quadrangle (1987), Green Level Quadrangle (1981), Southeast Durham Quadrangle (1987), Southwest Durham Quadrangle (1987).



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
**NC** **986171072**

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) <b>Burnham Service Corporation</b>		02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER <b>3211 Miami Boulevard</b>			
03 CITY <b>Research Triangle Park</b>	04 STATE <b>NC</b>	05 ZIP CODE <b>27709</b>	06 COUNTY <b>Durham</b>	07 COUNTY CODE <b>32</b>	08 CON DIS <b>02</b>
09 COORDINATES LATITUDE <b>35° 55' 16"</b>		LONGITUDE <b>78° 41' 49"</b>			

10 DIRECTIONS TO SITE (Starting from nearest public road)

Take I-40 east from Raleigh. Exit North on Miami Blvd. Go approximately 2 miles. Burnham is located on right.

III. RESPONSIBLE PARTIES

01 OWNER (if known) <b>Burnham Service Corporation</b>		02 STREET (Business, mailing, residential) <b>3211 Miami Boulevard</b>			
03 CITY <b>Research Triangle Park</b>	04 STATE <b>NC</b>	05 ZIP CODE <b>27709</b>	06 TELEPHONE NUMBER <b>(919) 828-0436</b>		
07 OPERATOR (if known and different from owner) <b>same as above</b>		08 STREET (Business, mailing, residential)			
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER ( )		
13 TYPE OF OWNERSHIP (Check one) <input checked="" type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL: _____ (Agency name) <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER: _____ (Specify) <input type="checkbox"/> G. UNKNOWN					
14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: ____/____/____ MONTH DAY YEAR <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (RCRA 103 d) DATE RECEIVED: ____/____/____ MONTH DAY YEAR <input checked="" type="checkbox"/> C. NONE					

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION <input type="checkbox"/> YES DATE ____/____/____ MONTH DAY YEAR <input checked="" type="checkbox"/> NO		BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER: _____ (Specify) CONTRACTOR NAME(S): _____			
02 SITE STATUS (Check one) <input checked="" type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN		03 YEARS OF OPERATION BEGINNING YEAR <b>1982</b> ENDING YEAR <b>present</b> <input type="checkbox"/> UNKNOWN			
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED <b>None</b>					
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION <b>None</b>					

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) <input type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspection on time available basis) <input checked="" type="checkbox"/> D. NONE (no further action needed, complete current disposition form)			
---	--	--	--

VI. INFORMATION AVAILABLE FROM

01 CONTACT <b>Dwight Nichols</b>	02 OF (Agency/Organization) <b>Burnham Service Corporation</b>		03 TELEPHONE NUMBER <b>919-828-043</b>	
04 PERSON RESPONSIBLE FOR ASSESSMENT <b>Martin Richmond/Pat DeRosa</b>	05 AGENCY <b>DEHNR</b>	06 ORGANIZATION <b>Superfund</b>	07 TELEPHONE NUMBER <b>(919) 733-2801</b>	08 DATE <b>3 27 90</b> MONTH DAY YEAR

## II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)	02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)	03 WASTE CHARACTERISTICS (Check all that apply)
<input type="checkbox"/> A. SOLID <input type="checkbox"/> B. POWDER, FINES <input type="checkbox"/> C. SLUDGE <input checked="" type="checkbox"/> D. OTHER <u>none</u> <small>(Specify)</small>	<input type="checkbox"/> E. SLURRY <input type="checkbox"/> F. LIQUID <input type="checkbox"/> G. GAS  TONS <u>none</u>  CUBIC YARDS _____  NO. OF DRUMS _____	<input type="checkbox"/> A. TOXIC <input type="checkbox"/> B. CORROSIVE <input type="checkbox"/> C. RADIOACTIVE <input type="checkbox"/> D. PERSISTENT  <input type="checkbox"/> E. SOLUBLE <input type="checkbox"/> F. INFECTIOUS <input type="checkbox"/> G. FLAMMABLE <input type="checkbox"/> H. IRRITABLE  <input type="checkbox"/> I. HIGHLY VOLATILE <input type="checkbox"/> J. EXPLOSIVE <input type="checkbox"/> K. REACTIVE <input type="checkbox"/> L. INCOMPATIBLE <input checked="" type="checkbox"/> M. NOT APPLICABLE

### III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	none		
OLW	OILY WASTE	none		
SOL	SOLVENTS	none		
PSO	PESTICIDES	none		
OCC	OTHER ORGANIC CHEMICALS	none		
IOC	INORGANIC CHEMICALS	none		
ACD	ACIDS	none		
BAS	BASES	none		
MES	HEAVY METALS	none		

## IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

[illegible]

## V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	None		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

## 11. SOURCES OF INFORMATION (the specific references, e.g., state files, sample analysis, reports)

- 1) Memo to file, from Martin Richmond, NC Superfund Section, Site Information; Burnham Service Corporation, NCD986171072, March 22, 1990.
- 2) USGS 7.5 minute Topographic Map, Cary Quadrangle (1987), Green Level Quadrangle (1981), Southeast Durham Quadrangle (1987), Southwest Durham Quadrangle (1987).



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
NCD 986171072

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION:  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

N/A

01 ☐ B. SURFACE WATER CONTAMINATION  
03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

N/A

01 ☐ C. CONTAMINATION OF AIR

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

N/A

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

N/A

01 ☐ E. DIRECT CONTACT

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

N/A

01 ☐ F. CONTAMINATION OF SOIL

03 AREA POTENTIALLY AFFECTED: \_\_\_\_\_  
(Acres)

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

N/A

01 ☐ G. DRINKING WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

N/A

01 ☐ H. WORKER EXPOSURE/INJURY

03 WORKERS POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

N/A

01 ☐ I. POPULATION EXPOSURE/INJURY

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_

02 ☐ OBSERVED (DATE: \_\_\_\_\_)  
04 NARRATIVE DESCRIPTION

☐ POTENTIAL

☐ ALLEGED

N/A



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NCD	986171072

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

N/A

01 ☐ K. DAMAGE TO FAUNA  
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

N/A

01 ☐ L. CONTAMINATION OF FOOD CHAIN  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

N/A

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES  
(Spills/runoff/standing liquids/leaking drums)

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

N/A

01 ☐ N. DAMAGE TO OFFSITE PROPERTY  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

N/A

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

N/A

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

N/A

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

N/A

III. TOTAL POPULATION POTENTIALLY AFFECTED: None

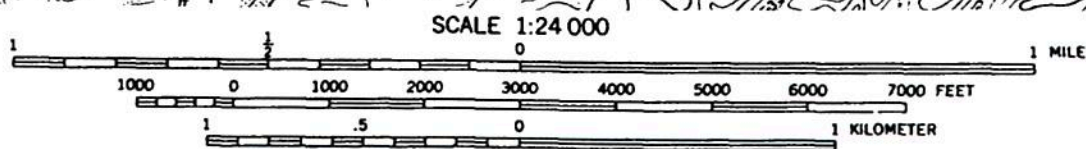
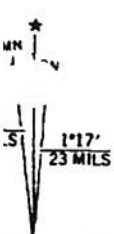
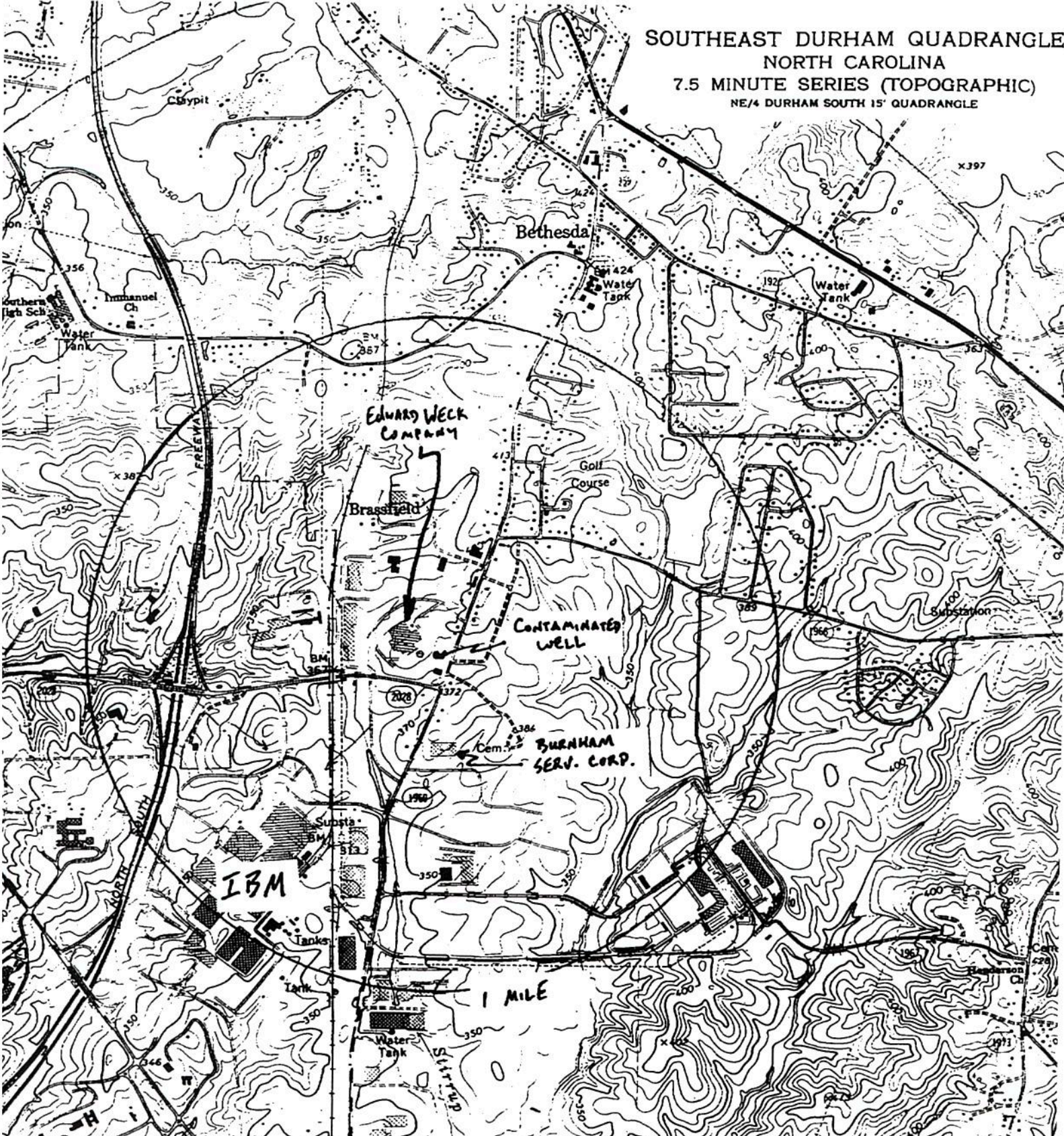
IV. COMMENTS

No waste on site.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis reports)

Same as Part I.

SOUTHEAST DURHAM QUADRANGLE  
NORTH CAROLINA  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
NE/4 DURHAM SOUTH 15' QUADRANGLE



CONTOUR INTERVAL 10 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

4-1

References



1. 7 LAKESIDE PARKWAY  
SUITE 614  
TUCKER, GEORGIA 30084  
404-938-7710

REFERENCE 1

C-586-1-9-46

January 10, 1989

Mr. Narindar Kumar  
Site Investigation and Support Branch  
Waste Management Division  
Environmental Protection Agency  
345 Courtland Street, N. E.  
Atlanta, Georgia 30365

Subject: Site Discovery Work  
Research Triangle Park  
Durham, Durham County, North Carolina  
TDD No. F4-8809-11, Billed

Dear Mr. Kumar:

During the week of October 13, 1988, FIT 4 conducted the fieldwork phase of three Preliminary Reassessments in the Research Triangle Park area of Durham, North Carolina. Some site discovery work was also performed in an attempt to locate possible sources responsible for the contamination of a residential well located just north of Research Triangle Park.

This private well had various organic contaminants in it, including 1, 1, 1-Trichloroethane at a concentration of 286 parts per billion. The IBM facility in Research Triangle Park is in the process of remediating a groundwater contamination plume of similar contaminants. Through groundwater flow data, and sample analyses data from its network of monitoring wells, IBM presented a reasonable case that the contamination in the private well was not coming from their property.

Offsite inspections were conducted for 6 industries in the vicinity of the private well, namely WECK, Inc., SCM Metal Finishers, Coljohn Mechanic, Niehs, Glidden Paint, and Brunam Service Corporation. The first five companies were located within one-half mile north of the private well, which according to available information would be upgradient. Of these five, two companies should be considered possible sources of the contamination. WECK, Inc. manufactures medical equipment and is listed as a large quantity generator. They generate over 1,200 kilograms per month of 1, 1, 1-Trichloroethane and are located on property adjacent to that of the contaminated private well. RCRA file information does not indicate that WECK has ever had any spills, and the offsite inspection of the facility gave no indication of poor housekeeping procedures; however, due to its proximity to the well and use of large amounts of 1, 1, 1-Trichloroethane, further investigation at WECK is warranted.

SCM Metal Finishers manufactures metal powders. It is not known what chemicals SCM uses in their process; they are not a RCRA facility. However, 1, 1, 1-Trichloroethane is often used in metal degreasing operations. Questionable housekeeping procedures were noted during the offsite recon; in particular, drums were stored on the ground outside and wet surficial soils were noted. Based on this information, SCM Metal Finishers should be investigated further, at least to the extent of determining whether they use chemicals such as 1, 1, 1-Trichloroethane.

Mr. Narindar Kumar  
Environmental Protection Agency  
TDD No. F4-8809-11  
January 10, 1989 - page two

The remaining four companies, Niehs, Glidden Paint, Coljohn Mechanic, and Brunam Service Company (located 1,500 feet to the southeast) did not appear to be likely sources. Niehs is currently an EPA warehouse. Glidden Paint and Coljohn Mechanic did not have any waste storage or disposal areas located outside the building. Brunam Service Company is located downgradient of the contaminated private well. This place appears to be a tractor trailer distribution center.

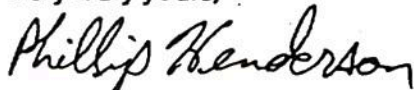
Geologic information that would be useful for more detailed investigations of groundwater flow in the area can be found in the IBM file, EPA ID No. NCD041463761, TDD No. F4-8804-25, which discusses IBM's monitoring and remediation program. Another source is a detailed geologic map of the area by Hoffmann, Gallagher, which is not yet available for publication, but is on display at the North Carolina Geologic Survey office in Raleigh. The private well, WECK, Inc., and possibly SCM Metal Finishers are underlain by a diabase sill, according to this map. Since the fractured diabase dikes and sills are permeable and act as conduits for groundwater movement, this information may be of relevance.

Two sites in Durham were also investigated as potential additions to the CERCLIS list. Major Chemical Company was inspected. During this offsite inspection, employees were observed washing drums and dumping the rinse water into the back parking lot. It is not known whether these drums contained any hazardous substances. In an attempt to collect more information on Major Chemical, state authorities were contacted. Major Chemical is not a RCRA facility, and the state had no information on the company. Larry Perry, the state field inspector for the Durham area, was contacted. He had no records of the company, but said he would take a look at this facility the next time he was in the area and then contact me. This information will be forwarded to EPA.

The other additional potential site was discovered while conducting research at Duke University. While passing a power substation, a large number of transformers were observed being stored on a concrete pad adjacent to the substation. The pad had a 6-inch high curb around it, and none of the transformers had visible leaks in them.

Enclosed are site discovery forms for all the aforementioned sites. File information and photographs are contained in the file for Airco Industrial Gases (NCD084172469, TDD No. F4-8809-11), one of the Preliminary Reassessments completed in Research Triangle Park. Project hours to complete this site discovery work were charged to the TDD for Airco Industrial Gases. Fifty-three hours were billed to complete this project. If you have any questions or comments, please contact me at NUS.

Very truly yours,



Phillip Henderson  
Project Manager

PH/kw

Enclosures ( )

cc: Robert Morris

Approved:



## REFERENCE 2

March 22, 1990

### MEMORANDUM

TO: File

FR: Martin Richmond *MR*

RE: Site Information; Burnham Service Corporation  
NCD 986 171 072

I spoke today with Mr. Dwight Nichols, Branch Manager of Burnham Service Corporation (919-828-0432) located on Miami Boulevard. He informed me of the following:

The Burnham Service Corporation is a moving and storage facility used to store items being moved. Occasionally this involves long term storage of over 1 month. Most items are stored for less than 1 week.

The facility was built in 1980, and Burnham began operations there in 1982. Before that, the land was undeveloped.

No hazardous materials are allowed to be brought into the warehouse for storage. No hazardous materials are used in their operations. Occasionally, machine parts or computer parts for IBM are stored on the property, however there has never been anything dangerous brought in and no materials have ever ruptured or leaked.

Mr. Nichols stated he would be happy to have our office come and inspect his facility, and would be willing to help in any way with our investigation of the contamination found in the private well nearby.

RECEIVED

REFERENCE 3

WASTE MANAGEMENT

DRAFT RCRA FACILITY INVESTIGATION REPORT  
M-AREA INVESTIGATION

IBM Corporation  
Research Triangle Park, North Carolina  
NCD 041 463 761

July 11, 1988

Prepared by  
IBM Corporation  
P. O. Box 12195, 559/002  
Research Triangle Park, North Carolina

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## I. BACKGROUND INFORMATION

The RCRA Permit NCD 041463761 M-1 issued by the U. S. EPA and the State of North Carolina to IBM Corporation in Research Triangle Park, North Carolina requires the complete assessment of all contaminant plumes potentially associated with a solid waste management unit (SWMU) at the permitted facility. At the time the permit became effective (October 25, 1988) the chemical plume in the northeast area (M-Area) of IBM's Research Triangle Park site had not been fully defined. The plume consists of chemicals similar to those associated with the historical release from SWMU No. 2 and to those found in a residential water supply well north of the area. Subsequently, IBM has been required to fully investigate the M-Area chemical plume through the implementation of an RCRA Facility Investigation (RFI) Workplan submitted to the U. S. EPA on February 25, 1988 with revisions on April 28, 1988.

Preliminary investigations of the M-Area in 1987 and early 1988 have included a pump test at well PR-5-B, a detailed magnetometer survey, and an evaluation of groundwater flow and chemistry conditions. These studies have shown the direction of groundwater flow is predominantly from the north (off-site) to the south (M-Site) and have not revealed a pathway for chemicals to migrate from the main site to the northern half of the M-Area. The absence of volatile organic compounds in observation wells located between the main site and the M-Area chemicals suggests separate plumes.

The principal examination of the M-Area occurred between April and June of 1988. The following report summarizes the action taken and data collected during this study as well as conclusions on groundwater and chemical flow in the M-Area based upon all information collected to date.

## II. WORKPLAN IMPLEMENTATIONS

### A. New Well Installations

Ten new observation wells were drilled in the M-Area at the onset of the investigation. They include AD-50, M-2-100, M-3-50, M-4-50, M-4-Dike, M-7-300, M-8-200, M-9-300, M-10-50, and M-10-300. Wilson Brothers Well Drilling installed the wells under the direction of S&ME using an air rotary rig from May 4 to May 16, 1988. A geologist from S&ME was present throughout the drilling operation to geologically log each well and to insure no contaminants were introduced to the wells. For decontamination purposes, the drill pipe and bit were steam cleaned before each well.

The geologic log for each new well is included in Appendix I. The boreholes were located in mostly siltstone and sandstone formations. A diabase dike was encountered in M-4-Dike and was probably just missed in M-10-50 and M-10-300. M-10-50 encountered a 5 foot shallow interval of diabase with no appreciable water. M-10-300 penetrated a thin interval of diabase around 80 feet below ground surface and yields an estimated 5 to 10 gallons per minute of water. Small lenses of formation oil were noted by the geologist in M-2-100, M-4-Dike, and M-9-300, however, no samples were collected to confirm the presence of a carbonaceous material.

A summary of the water bearing zones of the new M-Area wells is listed below. Typically, the better yielding water bearing zones are intervals of diabase, baked zones associated with the diabase intrusions, and sand units. No discrete water bearing zones were noted in AD-50, M-2-100, M-3-50, and M-10-50.

<u>Monitoring Well</u>	<u>Zone Interval</u>
M-4-50	22' - ?'
M-4-Dike	Diabase 12' - 93'; Sandy Zones 126'-132', 152'-156', 171'-175', 190'-193', 213'-216', 222'-224', 336'-238', 247'-249'
M-7-300	81'-88', 92'- ?', 173- ?'
M-8-200	83'-87', 112'-?'
M-9-300	140'-150', 219'- ?'
M-10-300	290'-292'

The geology of the wells is characteristic of the Durham Triassic Basin. The Triassic sedimentary rocks consist predominantly of silty sandstones and siltstones which commonly grade abruptly into each other vertically and laterally. The rock types vary greatly in lithology and thickness, thus making it difficult to trace stratigraphic units between wells. Dikes of dark igneous rock intruded into fractures in some of the Triassic sedimentary rocks. (Parker, 1979)

Three lithologic cross-sections were constructed from the new and existing monitoring wells in the M-Area. Two of the cross-sections run parallel to South Miami Boulevard and the third runs along Alexander Drive. The cross-sections as presented on Plates 1, 2, and 3 were drawn from the wells:

<u>A-A'</u>	<u>B-B'</u>	<u>C-C'</u>
310-500	PR-3	AD-500
M-1-300	PR-5-A	M-4-Dike
M-6-300	M-10-300	M-9-300
M-2-300	M-3	M-8-200
M-7-300	M-4-Dike	M-5-300
		M-7-300

As illustrated on cross-section C-C' (Plate 3), the soil and rock encountered changes from chiefly silt/siltstone to more sand/sandstones in the east to west direction along Alexander Drive. This change is consistent with the geologic study of the southeast and southwest 7.5 minutes quadrangles of the Durham Triassic Basin conducted by the Geological Survey Section of the North Carolina Department of Natural Resources and Community Development. (Hoffman and Gallagher, in preparation) The geologic map on display in the Geological Survey Office shows the formation generally changes along the portion of Alexander Drive between Southern Railroad and S. Miami Boulevard from a predominate sandstone unit to a predominate siltstone unit. The sandstone unit encompasses the northwest section of the M-Area where both M-4 and AD series wells are located and lies to the north of the M-5, M-7, M-8, and M-9 series wells.

No dikes or sills were encountered during the drilling of wells M-7-300, M-8-200, and M-9-300. However, the previous magnetic survey conducted by S&ME on April 4 and 5, 1988 did indicate the presence of diabase near M-8-200 and M-9-300. The geological map prepared by Hoffman and Gallagher does not show the existence of any dikes in this area or in the area immediately north of the site. The U. S. Geological Survey aeromagnetic anomaly map also does not indicate the presence of any dikes in either area (U.S.G.S., 1974). Both maps were, however, able to interpret the presence of the major dikes at the IBM facility.

#### B. Continuous Water Level Monitoring

A continuous water level monitor was setup on well M-1-300 to observe possible hydraulic interconnections to other wells which may be revealed during the drilling process. A significant drop in water elevation was observed in well M-1-300 during the drilling of the M-10 wells. The installation of the remaining eight wells had no effect on M-1-300.

#### C. Borehole Geophysical Study

To supplement geologic logging, a borehole geophysical study using the natural gamma ray log was conducted immediately after drilling. The gamma logs are included in Appendix I with the geologic logs. The natural gamma tool is a good method of lithologic determination, especially in defining diabase intervals.

The natural gamma method determines the approximate amount of gamma radiation within a formation caused by unstable isotopes within the rocks mineral constituents. In general, unstable isotopes within the formations in the studied area are potassium and carbon. These two elements are often found in the mineralogies of clays which are present in the sediments of the Triassic Basin. Clay is present in local silts and sands in varying amounts. The diabase dikes are unique to this log, as a low radiation mass. The dikes mineralogy consisting mainly of magnetite, hornblende, and plagioclase feldspar is relatively free of unstable isotopes. Therefore, extremely little gamma radiation is released from this rock type. Often associated with the diabase intrusions is the baking of the host rock. On the natural gamma log these "baked zones" occur as increased gamma radiation zones.

The geophysical logging was conducted by S&ME using a Widco Model 1200 borehole logging unit with the natural gamma tool. The truck mounted unit was set up about twenty feet away from the well. A tripod was set over the boring to guide the tool and to prevent drag between the cable and the well. The unit was calibrated to insure that the signature of the log was within the chart so that relative changes in gamma radiation would be noted. The log was then conducted while the tool was raised out of the well with a line speed of approximately 15 feet per minute. As the cable was raised from the well, it was rinsed with distilled water to remove any contaminants. Logs were then interpreted and compared with the geologic logs for determination of screen placement.

From the natural gamma log, diabase was determined to be present in wells AD-500 (374'-379'), M-6-300 (58'-61'), M-4-Dike (12'-93'), and M-10-50 (12'-17').

#### D. Recovery and Drawdown Tests

Two aquifer tests were conducted at IBM's Research Triangle Park, North Carolina facility in order to investigate the hydraulic and transport properties of the fractured bedrock aquifer underlying the site.

##### 1. Production Well PR-2 Recovery Test

The main site's recovery well PR-2 and pumping well 304-48 were shut down on May 24, 1988 at 10:15 a.m. in order to monitor the effect of PR-2 in the M-Area. PR-2 has an average pumping rate of 16 gallons per minute of water, draws the water table in the main dike down normally 60 to 80 feet, and appears to affect almost all of the wells on the main site. Prior to this test, the influence of PR-2 in the M-Area was unknown since all but one of the M-Area observation wells were drilled after its start up.

Sumps L-5 and R-2 remained in operation throughout the recovery test to prevent groundwater from penetrating the spill containment vaults outside of Building 304. All other pumping on site was delayed until the completion of the test. Prior to the test, IBM obtained the written approval of the U. S. EPA to shut down production well PR-2 for a two week period and to delay the regulated plume monitoring scheduled from May to June.

Water levels were measured frequently in 38 observation wells by IBM and S&ME personnel to the nearest 1/100th of a foot using an electronic water level indicator. The wells include CO-150, L-300, 401-M, PR-1, PR-2, PR-3, P-6-300, PR-5-B, X-1-100, 310-SH, 310-70, 310-100, 310-200-R, 310-300, 310-500, 627-100, DO-5, DO-5-70, SO-6-A, AD-50, GTE-Sh, GTE-500, M-1-55, M-1-150, M-2-100, M-2-300, M-3-50, M-3-300, M-4-50, M-4-200, M-4-Dike, M-5-50, M-6-50, M-6-55, M-6-300, and M-10-50.

The station barometric pressure readings and precipitation measurements are based upon the National Weather Service observations at the Raleigh-Durham Airport. These data were logged for each hour of the test to account for natural water level fluctuations. The pressure changes and rainfall over each 24 hour period of the test are listed below.

<u>Date</u> (May, 1988)	<u>Barometric Pressure Change</u> (inches of Mercury)	<u>Precipitation</u> (inches)
24-25	- 0.070	0.19
25-26	+ 0.385	0.11
26-27	+ 0.040	0.00
27-28	- 0.155	0.00
28-29	0.000	0.00
29-30	+ 0.060	0.00
30-31	- 0.050	0.00
Total	+ 0.210	0.30

## 2. M-4-Dike Drawdown Test

A drawdown test was performed on well M-4-Dike starting at 9:30 a.m. on May 31, 1988 and ending at 8:40 a.m. on June 7, 1988. The function of this test was to investigate the hydraulic response of the aquifer underlying the M-Area in order to predict the impact of off-site pumping to the northeast on predicted solute migration paths.

Well M-4-Dike was selected for the drawdown test due to its relatively high yield, its intersection with a northeast trending dike, and its north perimeter location. A flow rate of 6 gallons per minute was selected on the assumption that an additional five residential wells may have been in operation prior to the start up of PR-2 and water usage was twice the normal family rate of 800 gallons per day. IBM obtained the approval of the City of Durham to discharge the pumped groundwater into a nearby sanitary sewer manhole.

During the drawdown test, water levels were measured manually by IBM and S&ME in wells CO-150, L-300, 401-M, PR-1, PR-2, PR-3, P-6-300, PR-5-B, X-1-100, 310-SH, 310-70, 310-100, 310-200-R, 310-300, 310-500, 627-100, DO-5, DO-5-70, SO-6-A, AD-50, GTE-Sh, GTE-500, M-1-55, M-1-150, M-2-100, M-2-300, M-3-50, M-3-300, M-4-50, M-4-200, M-4-Dike, M-5-50, M-6-50, M-6-55, M-6-300, M-8-200, M-9-300, and M-10-50.

The monitoring frequency was based upon a logarithmic scale. At the onset of the test, frequent water level measurements were collected to develop the early portion of the pump curves and to compute transmissivity values for the wells. As time went on, the time between measurements steadily increased. For example, a water level reading was taken in M-4-Dike every half minute for the first five minutes, every minute for the next five minutes, every five minutes for the next fifty minutes, hourly the next seven hours, twice a day the next three days, and finally daily for the remainder of the test.

Steven's Recorders, continuous water level float monitors, were setup by S&ME on wells AD-500, M-1-300, M-7-300, M-10-300, and PR-5-B. A Keck unit, an electromagnetic device which controls the float, was used in conjunction with the Steven's recorder for the 2 and 4 inch diameter wells M-1-300 and PR-5-B. Initial, inter-mediate, and final manual water level readings were collected for each well to calibrate the recorders.

During the test, M-4-Dike pumped an average of 6.4 gpm and experienced a 10.5 foot decline in water elevation. Well PR-2 remained shut down and continued to recover. During the test no well purging occurred in the M-Area, however, wells M-1-150, M-2-100, M-3-300, and M-5-300 were still recovering from purging to sample in April and May. The six shallow compliance wells for the regulated units at the main site were purged on June 2, 1988 and sampled on June 3, 1988. All other wells on the main site were left undisturbed.

Again the station barometric pressure readings and precipitation measurements were logged to account for natural water level fluctuations. The pressure changes and rainfall over each 24 hour period of the test are shown on the following page.

<u>Date</u> (May/June, 1988)	<u>Barometric Pressure Change</u> (inches of Mercury)	<u>Precipitation</u> (inches)
31-1	- 0.125	0.00
1-2	- 0.165	0.00
2-3	- 0.025	0.00
3-4	+ 0.250	0.00
4-5	+ 0.120	0.00
5-6	- 0.145	0.00
6-7	- 0.125	0.00
Total	- 0.215	0.00

### 3. M-4-Dike Recovery Test

M-4-Dike was shut off at 8:40 a.m. on June 7, 1988. To help support the data collected during the drawdown test, the recovery effects of M-4-Dike were observed for the next eight hours.

The observation wells included CO-150, L-300, 401-M, PR-1, PR-2, PR-3, P-6-300, PR-5-B, X-1-100, 310-SH, 310-70, 310-100, 310-200-R, 310-300, 310-500, 627-100, DO-5, DO-5-70, SO-6-A, AD-50, AD-500, GTE-Sh, GTE-500, M-1-55, M-1-150, M-1-300, M-2-100, M-2-300, M-3-50, M-3-300, M-4-50, M-4-200, M-4-Dike, M-5-50, M-6-50, M-6-55, M-6-300, M-7-300, M-8-200, M-9-300, M-10-50, and M-10-300.

### E. Groundwater Monitoring

Two rounds of sampling were conducted during the investigation to define the boundaries of the volatile organic constituents present in the groundwater in the M-Area and to observe any changes in constituents and concentration brought about by the recovery of well PR-2 or drawdown of well M-4-Dike,

The initial sampling round was conducted by IBM personnel in three phases. First, existing wells, M-1-55, M-1-150, M-1-300, M-2-300, M-5-50, M-5-300, M-6-50, M-6-55 and M-6-300 were sampled April 5-12, 1988 and sent to Industrial & Environmental Analysts, (IEA), for analysis. A field blank FB-1 and a duplicate sample of M-2-300, DM-2, were also submitted to the IEA. Next, on April 22, 1988, newly screened well, M-4-200 was purged and sampled. An attempt was made to purge M-3-300 at the same time. However, due to the purging requirements, the low yielding properties of the formation in which M-3-300 was screened, and the limitations of the sampling equipment, M-3-300 was not sampled until May 17, 1988. Finally, samples were collected from new wells AD-50, M-2-100, M-3-50, M-4-50, M-7-300, M-8-200, M-9-300, M-10-50, and M-10-300 and existing well AD-500 from May 13-19, 1988 and submitted to IEA for analysis.

For the post-recovery/drawdown tests monitoring round, samples were collected by IBM personnel from June 7-12, 1988 from a selective group of wells which appeared to have been influenced by the recovery of PR-2 or the drawdown of M-4-Dike. These wells included AD-50, AD-500, M-1-300, M-3-50, M-4-50, M-4-Dike, M-5-50, M-6-55, M-7-300, M-8-200, M-9-300, and M-10-300. Additionally, wells 310-200-R, PR-3, PR-5-B, and P-6-300 were sampled as part of the main site plume monitoring program. A set of samples from all wells was submitted to IEA for analysis. Duplicate samples of 310-200-R and AD-500 were sent to Compuchem Laboratories to confirm IEA's results.

The collection and analysis of all groundwater samples followed the protocol outlined in the M-Site RCRA Investigation Workplan. Field testing was performed to determine the pH and specific conductivity of the groundwater. Laboratory analysis was conducted to measure the concentration of the following constituents using modified method SW 846 8010 (FID) and/or EPA Method 601/602 (PID):

1,1,1-Trichloroethane	Tetrachloroethene	Freon 11
1,1,2-Trichloroethane	Trichloroethene	Freon TF
1,1-Dichloroethane	1,1-Dichloroethene	Benzene
1,2-Dichloroethane	1,2-Dichloroethene	Toluene
Methylene Chloride	MEK	Acetone
Chlorodibromomethane	Ethyl Benzene	Chloroform
1,1,1,2-Tetrachloroethane		

Duplicate analysis of the chlorinated hydrocarbons including vinyl chloride was performed for all wells sampled after May 13, 1988 using the two different test methods.

During the sampling and analysis process, the samples were exposed to two chemicals which may have affected some of the samples. The first is acetone which may have been introduced to the sample during the sampling process. The isopropyl alcohol which is used as the final rinse solution during the decontamination of the teflon bailers changes very readily to acetone. If any isopropyl alcohol or acetone remained on the bailer, it could have easily shown up in the chemical results. The second contaminant originates in the laboratory. IEA frequently detects up to 15 ug/L of methylene chloride in its lab blanks as the result of the extraction tests using methylene chloride they perform on other samples.

### III. DATA EVALUATION

#### A. Recovery and Drawdown Tests

Two aquifer tests were performed in order to (1) establish the existence, if any, of major conductive pathways between the main plant and the M-Area, and (2) to determine if off-site pumping northeast of the M-Area could have historically reversed natural hydraulic gradients to the point that solute migration could have followed a northerly route, from the main plant, across the M-Area, and off site. A detailed analysis of the data collected during both test was performed by Dr. James Cullen and Mr. Craig Robertson of Groundwater Sciences Corporation and is included as an attachment to this report. The actual time-water level data for each well is included in Appendix II, III and IV.

##### 1. PR-2 Recovery Test

The groundwater flow direction in the M-Area at the start of the recovery test was from the north (off-site) to the south (M-Area). Initial water level readings are shown on Plates 4. Shallow groundwater level contours are illustrated on Plate 5.

During the recovery test, only four wells recovered sufficiently such that their response was considered to result from the shut down of PR-2. They include PR-2, L-300, P-6-300, and 401-M. Wells CO-150, PR-1, 310-300, and 627-100 may have exhibited a slight recovery; however, this is uncertain. The responses of the remaining wells were sufficiently small as to be indistinguishable from effects caused by other forces such as earth tides or changes in barometric pressure. Wells M-1-150, M-2-100, M-3-50, M-3-300, and M-5-300 exhibited apparent recoveries. However, these wells were recently sampled and are believed to be recovering from purging operations. Plate 6 indicates the recovery response for each well.

Due to the nature of the site geology, analysis of the results of the recovery test by the traditional methods is not possible. For this reason, the PR-2 recovery test should be viewed as a "connectivity test" more than anything else. Application of a traditional analysis, such as the method of C.V. Theis (1935) is predicated on numerous assumptions, many of which do not apply on the main plant site: the aquifer is strongly anisotropic (i.e., the geologic structure exerts strong directional control on the movement of water and dissolved constituents), dikes and possibly sills act as high-conductivity conduits for the movement of groundwater and the bedrock is of low permeability in comparison to the dike structure.

Figure 1 shows time-recovery plots for wells P-6-300, L-300, PR-2, and 401-M. The fact that the four curves are nearly superimposable is very significant. All four of these wells are located along one of the two intersecting dikes underlying the main plant. Radial distances from PR-2 exceed (in the case of 401-M) 1400 feet. Wells which are located much closer to PR-2 but off the dikes (for example PR-1 and CO-150) exhibit a much slower time-recovery response. This behavior indicates that the dike structures are highly transmissive and that the surrounding country rock is far less so. The near-simultaneous response of L-300, P-6-300, PR-2, and 401-M indicates that the dikes act as a linear collection system or "drain" when pumped. Water levels fall rapidly within the dikes until slow leakage from the surrounding bedrock into the dike can keep up with the pumping demand. Such systems, while uncommon, are not unheard of (Jenkins & Prentice, 1982).

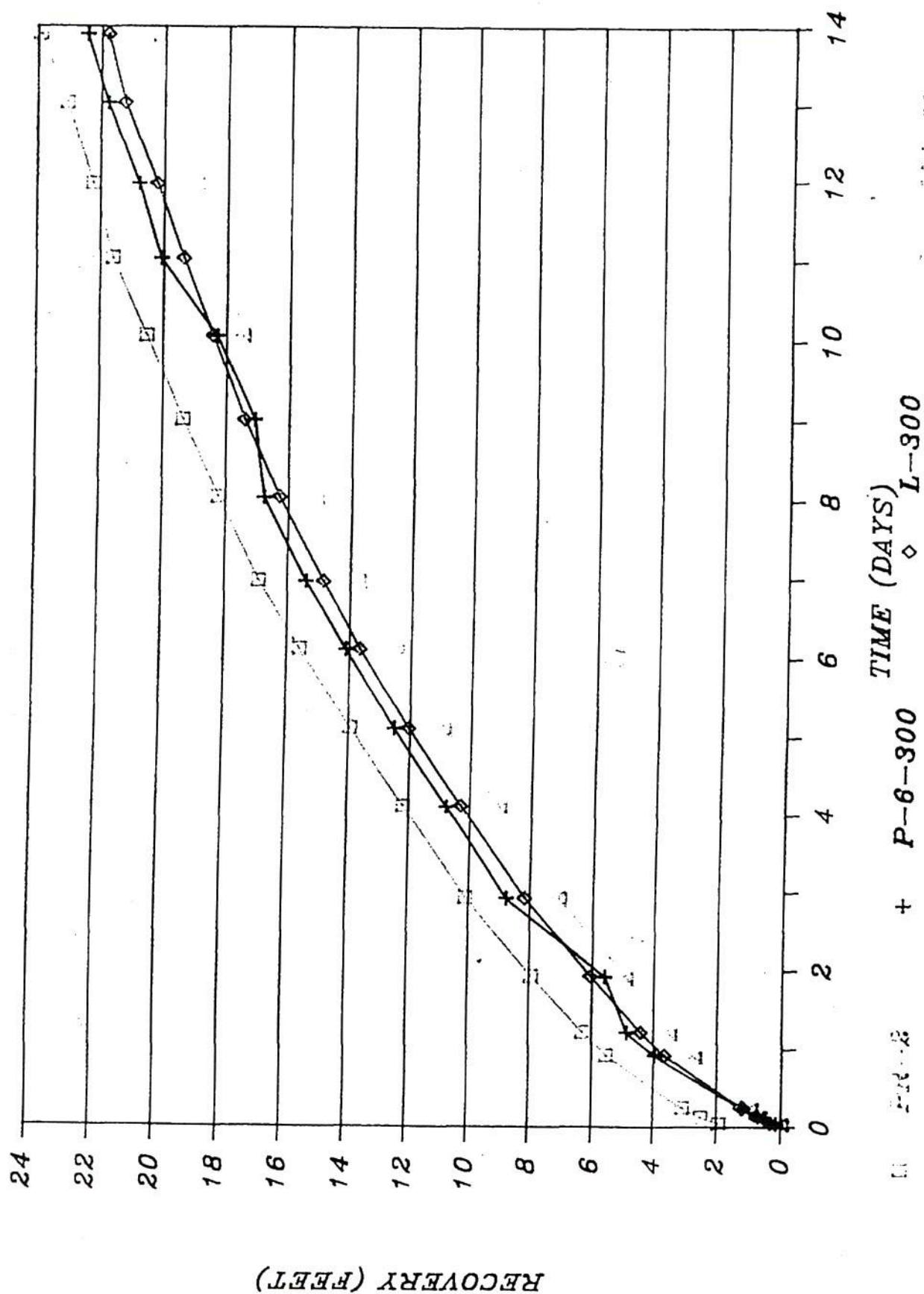
Well P-6-300 represents the northern-most point at which conclusive recovery was measured. Well 310-300, just south of the M-Area, most likely experienced a slight recovery as historical water level data for 310-300 illustrates a definite response to the initial pumping of PR-2. Any recovery in wells M-1-150, M-2-100, M-3-50, M-3-300, and M-5-300 would have been masked by purge recovery. A test was conducted to characterize the purge-recovery behavior of well M-3-50 in order that this effect could be subtracted from the recovery observed during the PR-2 test to see if any residual recovery remains. The recovery observed in M-3-50 during purge recovery was not significantly different from that exhibited during the PR-2 test.

## 2. M-4-Dike Pumping Test

During the pumping test, eleven wells are believed to have responded to the drawdown of M-4-Dike. They include AD-50, AD-500, M-3-50, M-4-50, M-4-200, M-5-50, M-6-50, M-6-55, M-7-300, M-8-200, and M-9-300. Well M-1-55 and M-6-300 did drawdown but it is unclear whether or not this was a response to the test. These two wells experienced similar drawdown during the PR-2 test. Wells CO-150, L-300, M-1-150, M-5-300, P-6-300, PR-1, PR-2, PR-3, X-1-100, and 401-M recovered either as purge recovery from sampling operations or as continued recovery from the PR-2 test. Well M-10-300 exhibited water level fluctuations on the magnitude of 2 to 3 feet; possibly the result of an off site pumping stress to the east. However, no overall decrease in water elevation was noted in M-10-300 and fluctuations continued after the pumping test. See Appendix VII. The responses of the remaining wells were undistinguishable from background effects. Plate 7 displays the drawdown response for each well. A cross-section showing the effect of M-4-Dike on the groundwater level in the wells parallel to Alexander Drive is presented on Plate 8.

FIGURE 1

# RECOVERY OF PR-2



The response of the aquifer during the test was noteworthy in that the presence of one or more geophysical anomalies, thought to be dikes, caused no noticeable influence on the drawdown response. The hydraulic behavior of the M-Area is very different from the response of the main plant site. It appears that traditional analytical approaches will be acceptable in characterizing the hydraulic response of the M-Area.

It is highly unlikely that off-site pumping could ever develop sufficient drawdown to cause a gradient reversal from the main plant area, across the M-Site and off site to the north. The M-4-Dike test was conducted at a pumping rate comparable to the combined estimated off-site pumping rate. Drawdowns of less than one foot were measured at radial distances of about 500 feet from M-4-Dike as shown on Plate 7. If a pumping center off site operated at a similar rate, similar drawdown response would be expected. Such drawdown would be far too small to create the gradient reversal necessary to cause northerly migration of the solutes.

#### B. Characterizations of the M-Area Chemistry

A summary of the chemicals detected in each M-Area wells during the two sampling rounds is presented on Table 1 and the latest chemical data for the M-Area is displayed on Plates 1, 2, 3, and 9. Chloroform and methylene chloride at less than 10 ug/L, acetone, and methyl ethyl ketone are omitted from the plates as they are not expected to be representative of the formation water. No data contouring was performed since the concentrations for the types of volatile constituents present vary from well to well.

As illustrated on Plates 2 and 9, with the exception of the chemicals detected in well P-6-300, no detectable level of volatile chlorinated hydrocarbons were measured between the main site chemical plume and the M-Area chemicals. P-6-300 contains only low levels of 1,1-dichloroethane and 1,1-dichloroethene at 13 ug/L and 8 ug/L, respectively. Wells P-6-300, 310-200-R, PR-3, PR-5-B, M-10-50, M-10-300, M-3-50, and M-3-300 effectively monitor the most probable pathways for solute migration from the main site and thus, establish a complete separation between the two areas.

Similarly, the wells along the northeast boundary of the M-Area have very low to non detectable concentrations of volatile chlorinated hydrocarbons. (Note, methylene chloride less than 10 ug/L is considered a laboratory contaminant.) The wells include M-5-50, M-5-300, M-7-300, M-8-200, and M-9-300. As indicated on Plate 3, these wells encountered mostly silts and siltstones which have a characteristic low hydraulic conductivity.

Table 1.

SUMMARY OF M-AREA CHEMISTRY  
April - June, 1988

WELL NAME	CONSTITUENT	CONCENTRATION (ug/L)	
		April/May, 1988	June, 1988
AD-50	Benzene	< 5	12
	1,1-Dichloroethane	< 1	2
	1,1-Dichloroethene	1	< 1
	trans 1,2-DCE	4	< 1
	Vinyl Chloride	1	< 1
	Trichloroethene	1	1
AD-500	1,1-Dichloroethane	4	5
	1,1-Dichloroethene	11	8
	Vinyl Chloride	27	12
	Trichloroethene	4	2
	Freon 11	4	< 1
	Tetrachloroethene	3	< 1
	Chloroform (1)	2	< 1
	trans 1,2-DCE	4	< 1
M-1-55	All	< 5	NS
M-1-150	1,1-Dichloroethane	84	NS
	1,2-Dichloroethane	31	NS
	Toluene	220	NS
M-1-300	1,1,1-Trichloroethane	5	< 1
	Methylene Chloride (2)	8	< 1
M-2-100	All	BDL	NS
M-2-300	1,1,1-Trichloroethane	150	NS
	1,1-Dichloroethene	13	NS
	Methylene Chloride	100	NS
	Toluene	34	NS
	Acetone (3)	100	NS
M-3-50	Acetone (3)	< 5	8
M-3-300	Acetone (3)	41	NS
M-4-50	1,1,1-Trichloroethane	13	5
	1,1-Dichloroethane	13	9
	1,1-Dichloroethene	18	10
M-4-200	Acetone (3)	7	NS

Table 1. Continued.

WELL NAME	CONSTITUENT	CONCENTRATION (ug/L)	
		April/May, 1988	June, 1988
M-4-Dike	1,1-Dichloroethane	6	5
	1,1-Dichloroethene	7	10
	1,1,1-Trichloroethane	3	2
	Trichloroethene	1	1
	Methylene Chloride (2)	< 1	5
	Vinyl Chloride	9	15
	Acetone (3)	11	< 5
M-5-50	Methylene Chloride (2)	< 5	5
M-5-300	Freon TF	15	NS
	Chloroform (1)	6	NS
	Acetone (3)	90	NS
M-6-50	Methylene Chloride (2)	6	NS
M-6-55	All	< 5	BDL
M-6-300	Acetone (3)	50	NS
M-7-300	1,1-Dichloroethane	< 1	1
M-8-200	Acetone (3)	< 5	20
M-9-300	All	< 5	BDL
M-10-50	All	BDL	NS
M-10-300	All	BDL	BDL
P-6-300	1,1-Dichloroethane	NS	13
	1,1-Dichloroethene	NS	8
	Acetone (3)	NS	7
PR-3	All	NS	BDL
PR-5-B	Methyl Ethyl Ketone (4)	NS	2900
310-200-R	All	NS	BDL

Table 1. Continued.

NOTES

1. Chloroform is a constituent expected to have been introduced during the development process of the wells. The incoming city water supply to the IBM site contains up to 100 ug/L of chloroform.
2. The methylene chloride is expected to be present as the result of laboratory contamination. Sample blanks contain up to 15 ug/L of methylene chloride.
3. The acetone is expected to have been introduced during the sampling process. The isopropanol used to decontaminate the sampling equipment changes rapidly to acetone. If any isopropanol remains on the sampling equipment, it could easily be detected in the samples as acetone.
4. The methyl ethyl ketone (MEK) in well PR-5-B was a component of the glue used to join the casing fittings during the well's installation.
5. NS means not sampled and BDL means below detection limit.

The clean northeast boundary is important for two reasons. First, it further separates IBM's main site organic plume from the residential well located immediately north of this boundary. Secondly, it isolates the M-2-300 well from a potential off-site source.

Upon review of the data, it appears the chemicals present in M-2-300 are from a localized source, cross-contamination with another well, or contamination introduced during its screening. Interesting enough, no volatile organic constituents were measured above the detection limit of 10 ug/L when sampled on May 23, 1985 prior to screening. Volatile organics appeared in M-2-300 immediately after screening in June, 1985 and reached a peak in December, 1985. Since that time, the concentrations of volatile organics have been steadily declining. IBM plans to further explore the possibility that contaminants may have been introduced to M-2-300 during the screening or sampling process with the drilling of an identical well approximately 10 feet away.

The chemicals in well M-1-150 may be related to similar cross-contamination or screening contamination as in M-2-300. Both wells were drilled by N. W. Poole Well Drillers within a day of each other and screened by S&ME/Heater Well at roughly the same time. Both wells were also sampled about the same time and possibly with the same equipment. The slow rate of recovery in M-1-150 (approximately 6 months to full recovery) would tend to cause contaminants added to the well to remain for a long time.

The area encompassing AD-50, AD-500, M-4-50, M-4-200, and M-4-Dike does contain elevated volatile organic constituents in the shallow portion of the aquifer. The presence of volatile chlorinated hydrocarbons at deeper elevations is not known for wells AD-500 and M-4-Dike open hole wells. However, M-4-200 shows no detectable values.

Historical analytical data is available for well AD-500 for the years 1981 to 1988. Table 2 shows the maximum, minimum, and average values of 1,1,1-trichloroethane, 1,1-dichloroethene, and 1,1-dichloroethane for each of these years. When five or more samples were collected during the year, the maximum and minimum values when not used to compute the average. The historical data shows (1) the total volatile organic constituent levels are greater now than they were prior to the start-up of the PR-2 production well operation in September 1981, (2) the transformation of 1,1,1-trichloroethane to 1,1-dichloroethene, 1,1-dichloroethane, and vinyl chloride is occurring, and (3) the level of chemicals in AD-500 have always been less than the concentrations measured recently in the off-site residential well of concern.

TABLE 2. AD-500 HISTORICAL ANALYTICAL DATA

YEAR	NO. OF SAMPLES	STAT	1,1,1-TCA (ug/L)	1,1-DCA (ug/L)	1,1-DCE (ug/L)
1981	20	Maximum	6.1	BDL	BDL
		Minimum	BDL	BDL	BDL
		Average	0.5	BDL	BDL
1982	20	Maximum	8.3	BDL	0.5
		Minimum	BDL	BDL	BDL
		Average	1.0	BDL	0.2
1983	12	Maximum	31	4.0	376
		Minimum	BDL	BDL	BDL
		Average	6.6	0.4	BDL
1984	10	Maximum	14	9.5	2.0
		Minimum	BDL	BDL	BDL
		Average	5.4	3.1	BDL
1985	5	Maximum	28	BDL	BDL
		Minimum	BDL	BDL	BDL
		Average	BDL	BDL	BDL
1986	2	Maximum	BDL	10.0	BDL
		Minimum	BDL	BDL	BDL
		Average	BDL	5.0	BDL
1987	3	Maximum	BDL	8.0	BDL
		Minimum	BDL	BDL	BDL
		Average	BDL	6.0	BDL
1988	2	Maximum	BDL	11	5
		Minimum	BDL	8	4
		Average	BDL	10	5

In summary, it appears that the chemicals present in the M-Area and in the off-site residential well are unrelated to the chemical plume at the main plant site. The chemicals in M-2-300 may be present as the result of a localized source. The chemicals in the AD and M-4 series wells and in the residential well seem to originate from an off-site source to the north of the M-Area.

### C. Historical Groundwater Flow Data Evaluation

#### PR-5-B Drawdown Test

A two week long drawdown test began on May, 18, 1987 in well PR-5-B and ended on June 1, 1987. The test was performed to establish the existence, if any, of major conductive pathways between the main plant site and the M-Area and to evaluate the effectiveness of PR-5-B as a second production well.

During the test, PR-5-B pumped approximately 15 gpm and experienced a 66 foot drop in water elevation. Production well PR-2 remained in normal operation. Water level measurements were collected from the observation wells on site at least six different days during the test and from a few of the wells on eight separate occasions. Frequent early readings for PR-5-B and other influenced wells were not obtained.

The total drawdown monitored from May 18, 1987 to June 29, 1987 in observation wells of significance to the M-Area is noted below.

<u>WELL NAME</u>	<u>DRAWDOWN (Feet)</u>	<u>COMMENTS</u>
AD-500	0.42	Questionable
GTE-SH	7.06	Fluctuated
GTE-500	0.42	Fluctuated
L-300	0.24	No Response
M-1-55	0.17	Fluctuated
M-1-150	+ 6.7	Purge Recovery
M-1-300	63.93	Interconnection
M-2-300	+ 0.59	Purge Recovery
M-3	35.19	Interconnection
M-4	0.15	Questionable
P-6-300	0.79	No Response
PR-2	+ 3.55	No Response

Interconnection between PR-5-B, M-1-300, and M-3 was determined to be very good as expected. Historically, the water elevation in these three wells remains within a foot of each other.

No significant interconnection was found between PR-5-B and other wells in the M-Area. The number of data points collected for AD-500 and M-4 was not sufficient to assess other possible variables affecting the well such as an off-site residential well. M-1-150 and M-2-300 were undergoing purge recovery and thus no interconnection could be observed. The fluctuations observed in M-1-55, GTE-Sh, and GTE-500 make it impossible to determine an interconnection without the collection of more data for the well. These wells may have continued to fluctuate after the test as the result of another unknown pumping stress.

#### AD-500/PR-2 Historical Water Elevation Comparison

AD-500 is a 484 foot open hole well located in the northwest corner of the M-Area. The well was drilled on September 18, 1980 for perimeter monitoring. During installation, AD-500 encountered a sandy siltstone water bearing zone estimated at 20 gpm at a depth of 138' to 140' and diabase at 370' to 375' below ground surface.

Well PR-2 was drilled to 147 feet on February 26, 1981 as an open hole monitoring well. Diabase was intercepted in PR-2 at a depth of 18' to 110' and produced an estimated 80 gpm. By the end of September, 1981, PR-2 began full operation as a recovery well.

Throughout 1981, the water elevations in AD-500 and PR-2 were measured weekly by Industrial and Environmental Analysts. Figure 2 displays the average monthly water level for each well in 1981. Prior to the pumping of PR-2, the water level in PR-2 was consistently 3 to 4 feet lower than that of AD-500. At that time the hydraulic gradient was from AD-500 to PR-2. After PR-2 began production, its water level dropped 60 to 80 feet below normal and no change, other than seasonal fluctuations was observed in AD-500. Since drawdown of PR-2 had no effect on AD-500, no hydraulic connection exists between the two wells. The hydraulic gradient was from AD-500 to PR-2 both before and after pumping started at PR-2.

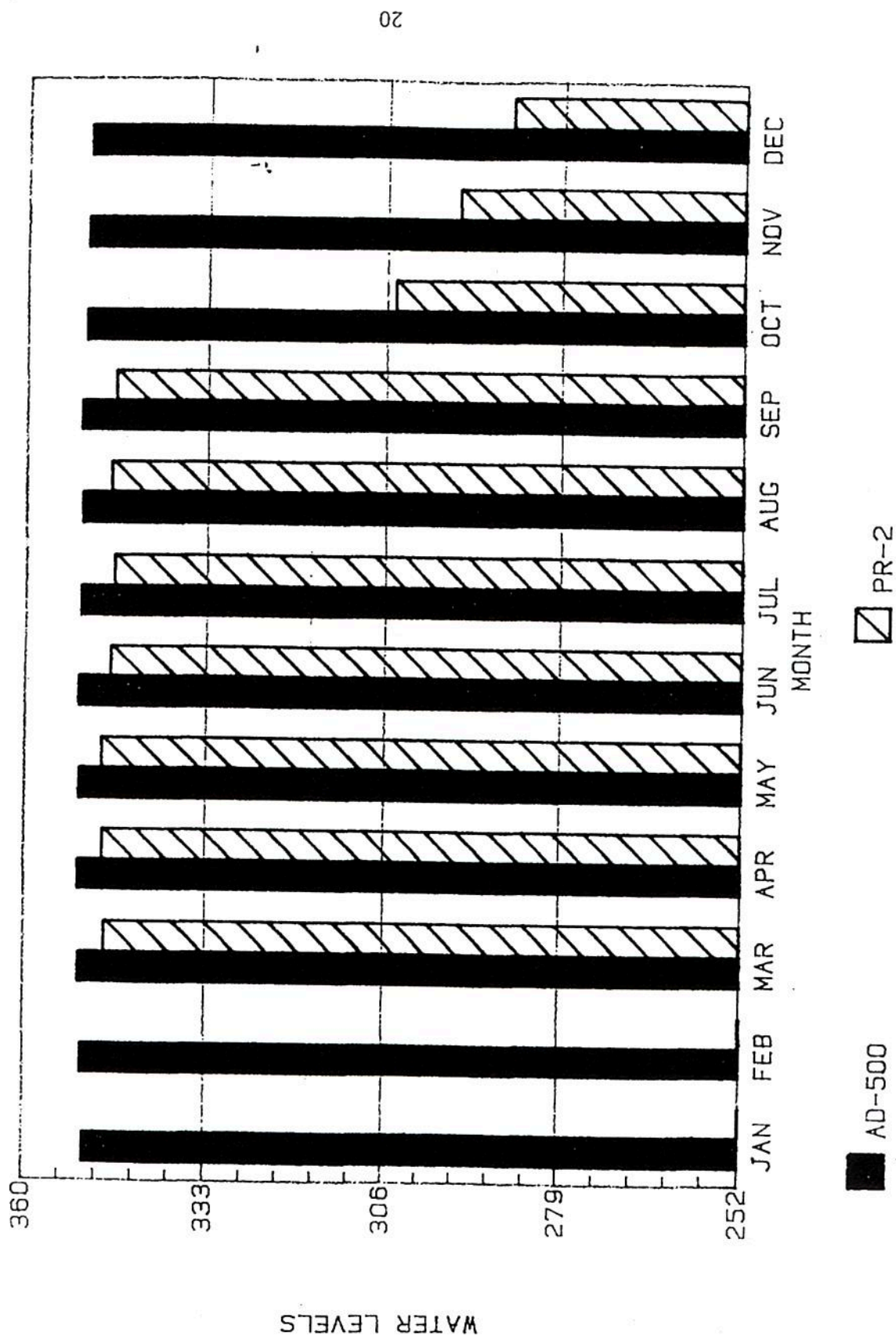
#### IV. SUMMARY AND CONCLUSION OF RCRA FACILITY INVESTIGATION

The data collected during the M-Area investigations demonstrates 1) the M-Area and the main site organic plumes are separate; 2) no major conductive pathway for solute migration exists between the main site and the northern half of the M-Area; and 3) production well PR-2 has not altered groundwater flow in the M-Area.

The set of "clean" wells located in the most probable pathways for solute migration between the main organic plume and the M-Area and the absence of elevated chemistry in well AD-500 prior to the production of PR-2 establish separate plumes.

FIGURE 2

# WATER LEVEL EVALUATION



The recent PR-2 recovery and M-4-Dike drawdown tests and the 1987 PR-5-B drawdown test rule out possible conductive paths between the main site and the M-Area. None of the observation wells experienced both recovery and drawdown during the PR-2/M-4-Dike investigations. The influences of PR-2 and PR-5-B only extend north as far as wells M-1-300 and M-3-300. M-1-55 and M-3-50 did not appear to be affected. The southernmost boundary of the M-4-Dike drawdown encompassed only the shallow M-3 and M-6 nested wells. Historical 1981 water level data for AD-500 and PR-2 corroborates the lack of connection between the northern boundary and the main site.

Well AD-500 clearly establishes that groundwater flow in the M-Area has not been altered by the drawdown of PR-2. Current data shows the groundwater flows from off-site (north) to on-site (south). Historical data demonstrates that AD-500 is consistently higher in water elevation than PR-2. The M-4-Dike drawdown test demonstrates a hydraulic connection between AD-500 and the other M-wells along Alexander Drive. If AD-500 remains unaffected by PR-2 and is interconnected to northern M-wells, then the interconnected wells are expected to be unaffected by PR-2. Throughout the drawdown test, the water levels along the northern border were higher than the recovery well PR-2 levels before pumping started.

Analysis of the drawdown pattern resulting from the M-4-Dike tests shows that pumping at this same rate from combined domestic wells yields north of the M-Area would not have resulted in sufficient drawdown in the M-Area perimeter wells to produce a gradient reversal from the main plant area to the M-Area. Therefore, the chemicals found in the M-Area wells and one domestic well off site to the north must originate from some off-site source to the north.

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Reference  
#4

OVERSIZED

DOCUMENT

MAP



State of North Carolina  
Department of Environment, Health, and Natural Resources  
Division of Solid Waste Management  
P.O. Box 27687 · Raleigh, North Carolina 27611-7687

James G. Martin, Governor  
William W. Cobey, Jr., Secretary

William L. Meyer  
Director

March 27, 1990

Mr. Robert Morris  
EPA NC CERCLA Project Officer  
EPA Region IV Waste Division  
345 Courtland Street, NE  
Atlanta, GA 30365

Dear Mr. Morris:

SUBJECT: Preliminary Hazard Ranking System (HRS) Score  
Burnham Service Corporation  
NCD 987 171 072  
Research Triangle Park, NC

Please find enclosed the preliminary Hazard Ranking Score (HRS) packet for the subject site. This packet contains an HRS Scoresheet for the groundwater pathway only. This is due to the fact this site evaluation is based on information obtained from a contaminated well located near to the facility. Since the source of the contamination is unknown, no surface water targets can be evaluated. Also included are a list of references for the site.

If you have any questions, please contact me at (919) 733-2801.

Sincerely,

A handwritten signature in cursive script, appearing to read "Pat DeRosa".

Pat DeRosa  
Environmental Chemist  
NC Superfund Section

A handwritten signature in cursive script, appearing to read "Martin Richmond".

Martin Richmond  
Environmental Chemist Trainee  
NC Superfund Section

Facility name:	Burnham Service Corporation		
Location:	Research Triangle Park, North Carolina		
EPA Region:	IV		
Person(s) in charge of the facility:	Mr. Dwight Nichols		
	(919) 828-0436		
Name of Reviewer:	Martin Richmond/Pat DeRosa	Date:	March 27, 1990
General description of the facility:			
(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)			
Site was evaluated to determine possibility of responsibility for			
contaminated private well. No hazardous materials are on this			
facility.			
Scores: $S_M = 0.00$ ( $S_{gw} = 0.00$ $S_{sw} = N/S$ $S_a = 0.00$ )			
$S_{FE} =$ Not scored			
$S_{DC} =$ Not scored			

FIGURE 1  
HRS COVER SHEET

Ground Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Rel. (Section)	
1 Observed Release	0 <b>45</b>	1	45	45	3.1	
<p><b>Offsite well contamination--not attributable to this site.</b></p> <p>If observed release is given a score of 45, proceed to line 2.</p> <p>If observed release is given a score of 0, proceed to line 2.</p>						
2 Route Characteristics					3.2	
Depth to Aquifer of Concern	0 1 2 3	2		6		
Net Precipitation	0 1 2 3	1		3		
Permeability of the Unsaturated Zone	0 1 2 3	1		3		
Physical State	0 1 2 3	1		3		
Total Route Characteristics Score				15		
3 Containment	0 1 2 3	1		3	3.3	
4 Waste Characteristics					3.4	
Toxicity/Persistence	<b>0</b> 3 6 9 12 15 18	1	0	18		
Hazardous Waste Quantity	<b>0</b> 1 2 3 4 5 6 7 8	1	0	8		
<p>Toxicity is zero since no materials are present. Quantity is also zero.</p>						
Total Waste Characteristics Score			0	26		
5 Targets					3.5	
Ground Water Use	0 1 2 <b>3</b>	3	<b>9</b>	9		
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 <b>30</b> 32 35 40	1	30	40		
<p>Groundwater use in the area is for drinking water by some residents within three mile radius of the site. Total population estimated using groundwater is 2,569 people. Nearest well is the contaminated well, located 800 feet away.</p>						
Total Targets Score			39	49		
6	<p>If line 1 is 45, multiply 1 x 4 x 5</p> <p>If line 1 is 0, multiply 2 x 3 x 4 x 5</p>			0.00	57,330	
7	Divide line 6 by 57,330 and multiply by 100			S <sub>gw</sub> = 0.00		

FIGURE 2

Surface Water Site Worksheet						
Rating Factor	Assigned Value (Circle One)	Multi- plier	Score	Max. Score	Ref. (Section)	
<b>1</b> Observed Release	0      45	1		45	4.1	
If observed release is given a value of 45, proceed to line <b>4</b> . If observed release is given a value of 0, proceed to line <b>2</b> .						
<b>2</b> Route Characteristics					4.2	
Facility Slope and Intervening Terrain	0 1 2 3	1		3		
1-yr. 24-hr. Rainfall	0 1 2 3	1		3		
Distance to Nearest Surface Water	0 1 2 3	2		6		
Physical State	0 1 2 3	1		3		
Total Route Characteristics Score				15		
<b>3</b> Containment	0 1 2 3	1		3	4.3	
<b>4</b> Waste Characteristics					4.4	
Toxicity/Persistence	0 3 6 9 12 15 18	1		18		
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8		
Total Waste Characteristics Score				26		
<b>5</b> Targets					4.5	
Surface Water Use	0 1 2 3	3		9		
Distance to a Sensitive Environment	0 1 2 3	2		6		
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1		40		
Total Targets Score				55		
<b>6</b> If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b>				64,350		
<b>7</b> Divide line <b>6</b> by 64,350 and multiply by 100			S <sub>SW</sub> - Not scored			

FIGURE 7

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi- plier	Score	Max. Score	Ref. (Section)
<b>[1]</b> Observed Release	<u>0</u> 45	1		45	5.1
Date and Location:					
Sampling Protocol:					
If line <b>[1]</b> is 0, the $S_a = 0$ . Enter on line <b>[5]</b> If line <b>[1]</b> is 45, then proceed to line <b>[2]</b>					
<b>[2]</b> Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
<b>[3]</b> Targets					5.3
Population Within 4-Mile Radius	{ 0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
Total Targets Score				39	
<b>[4]</b> Multiply <b>[1]</b> x <b>[2]</b> x <b>[3]</b>			0.00	35,100	
<b>[5]</b> Divide line <b>[4]</b> by 35,100 and multiply by 100		$S_a = 0.00$			

FIGURE 9  
AIR ROUTE WORK SHEET

	S	S <sup>2</sup>
Groundwater Route Score (S <sub>gw</sub> )	0.00	0.00
Surface Water Route Score (S <sub>sw</sub> )	Not scored	---
Air Route Score (S <sub>a</sub> )	0.00	0.00
$S_{gw}^2 + S_{sw}^2 + S_a^2$		0.00
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		0.00
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M$		0.00

FIGURE 10  
WORKSHEET FOR COMPUTING S<sub>M</sub>

Fire and Explosion Work Sheet												
Rating Factor	Assigned Value (Circle One)							Mplier	Score	Score	(Section)	
1 Containment	1		3					1		3	7.1	
2 Waste Characteristics											7.2	
Direct Evidence	0		3					1		3		
Ignitability	0	1	2	3				1		3		
Reactivity	0	1	2	3				1		3		
Incompatibility	0	1	2	3				1		3		
Hazardous Waste Quantity	0	1	2	3	4	5	6	7	8	1	8	
Total Waste Characteristics Score											21	
3 Targets											7.3	
Distance to Nearest Population	0	1	2	3	4	5		1		5		
Distance to Nearest Building	0	1	2	3				1		3		
Distance to Sensitive Environment	0	1	2	3				1		3		
Land Use	0	1	2	3				1		3		
Population Within 2-Mile Radius	0	1	2	3	4	5		1		5		
Buildings Within 2-Mile Radius	0	1	2	3	4	5		1		5		
Total Targets Score											24	
4 Multiply 1 x 2 x 3											1,440	
5 Divide line 4 by 1,440 and multiply by 100										SFE = Not scored		

FIGURE 11  
FIRE AND EXPLOSION WORK SHEET

Direct Contact Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multi- plier	Score	Max. Score	Rel. (Section)
<b>1</b> Observed Incident	0	45	1		45	2.1
If line <b>1</b> is 45, proceed to line <b>4</b> If line <b>1</b> is 0, proceed to line <b>2</b>						
<b>2</b> Accessibility	0	1 2 3	1		3	2.2
<b>3</b> Containment	0	15	1		15	2.3
<b>4</b> Waste Characteristics Toxicity	0	1 2 3	5		15	2.4
<b>5</b> Targets						2.5
Population Within a 1-Mile Radius	0	1 2 3 4 5	4		20	
Distance to a Critical Habitat	0	1 2 3	4		12	
Total Targets Score					32	
<b>6</b> If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b>					21,600	
<b>7</b> Divide line <b>6</b> by 21,600 and multiply by 100				SDC - Not scored		

FIGURE 12  
DIRECT CONTACT WORK SHEET

## PRELIMINARY ASSESSMENT

Burnham Service Corporation  
NCD 986171072

### REFERENCES

1. Letter to Mr. Narindar Kumar, EPA Region IV, from Phillip Henderson, NUS Corporation, Site Discovery Work, January 10, 1989.
2. Memo to file, from Martin Richmond, NC Superfund Section, Site Information; Burnham Service Corporation, NCD 986171072, March 22, 1990.
3. Draft RCRA Facility Investigation Report: M-Area Investigation, IBM Corporation, Research Triangle Park, NC, July 11, 1988.
4. USGS 7.5 Minute Topographic Map, Cary Quadrangle (1987), Green Level Quadrangle (1981), Southeast Durham Quadrangle (1987), Southwest Durham Quadrangle (1987).

Added 5/

# SITE DISCOVERY FORM

# 5231

Part 1: Information necessary to add a site to CERCLIS

ACTION: A

EPA ID: \_\_\_\_\_

SITE NAME: Brunahm Service Corp

SOURCE: R (R=EPA, T=ST)

STREET: 3211 S Miami Blvd

CONG DIST: \_\_\_\_\_ (optional)

CITY: Research Triangle Park

ZIP: \_\_\_\_\_

CNTY NAME: Durham

CNTY CODE: \_\_\_\_\_ (optional)

LATITUDE: 35° 55' 15"

LONGITUDE: 78° 50' 53" (optional)

INVENTORY IND: Y REMEDIAL IND: Y REMOVAL IND: N FED FAC IND: N

RPM NAME: Robert Morris

RPM PHONE: (404) - 347 - 5065 (EPA Project Off: \_\_\_\_\_)

SITE DESCRIPTION: (optional)

Truck and Trailer Distribution Center

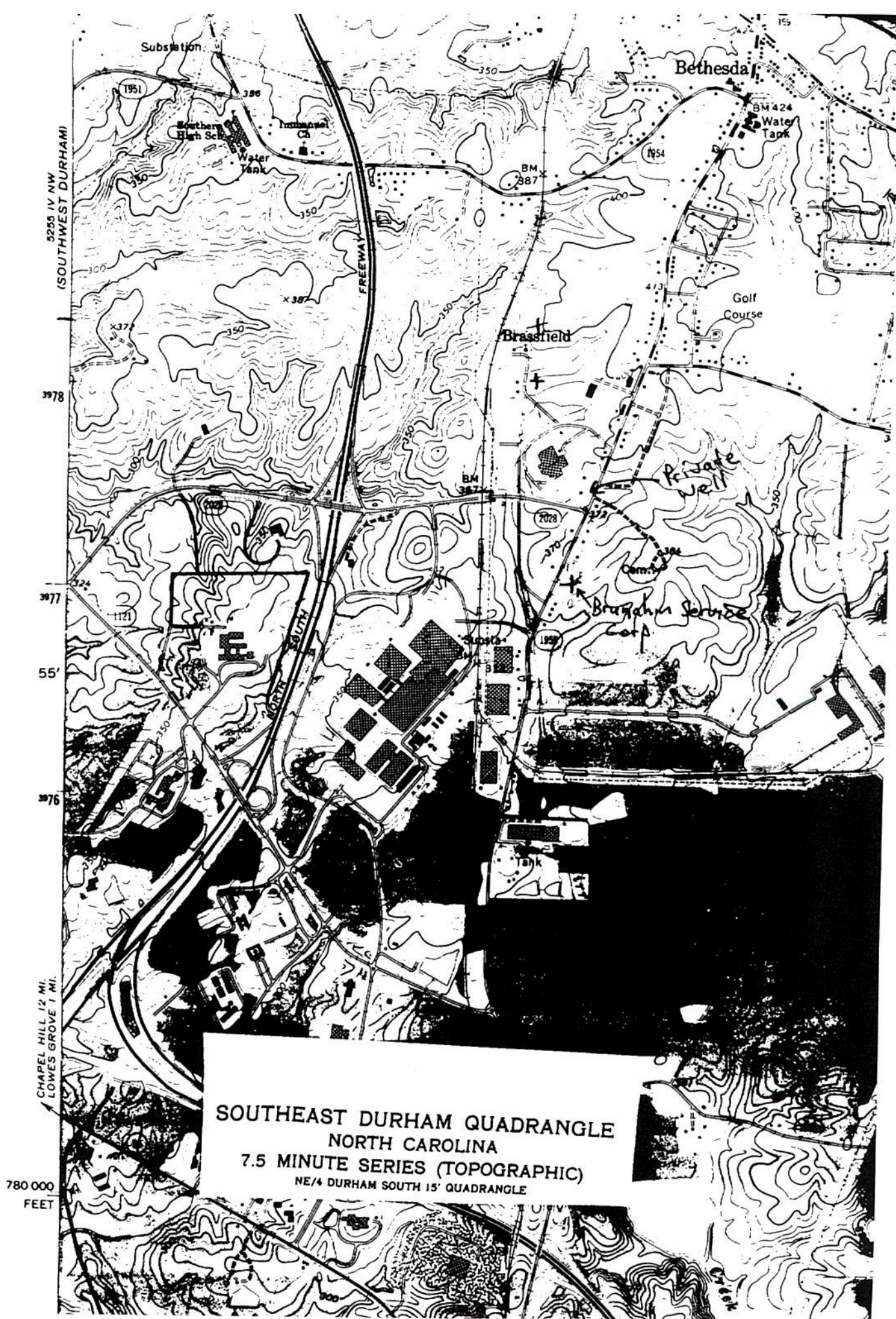
Part 2: Other site information

DATE SITE FIRST

REPORTED: 10 / 13 / 88

REPORTED BY: Phillip Henderson

REASON FOR LISTING: \_\_\_\_\_





BRUNNEN-RTB



1927 LAKESIDE PARKWAY  
SUITE 614  
TUCKER, GEORGIA 30084  
404-938-7710

C-586-1-9-46

January 10, 1989

Mr. Narindar Kumar  
Site Investigation and Support Branch  
Waste Management Division  
Environmental Protection Agency  
345 Courtland Street, N. E.  
Atlanta, Georgia 30365

Subject: Site Discovery Work  
Research Triangle Park  
Durham, Durham County, North Carolina  
TDD No. F4-8809-11, Billed

Dear Mr. Kumar:

During the week of October 13, 1988, FIT 4 conducted the fieldwork phase of three Preliminary Reassessments in the Research Triangle Park area of Durham, North Carolina. Some site discovery work was also performed in an attempt to locate possible sources responsible for the contamination of a residential well located just north of Research Triangle Park.

This private well had various organic contaminants in it, including 1, 1, 1-Trichloroethane at a concentration of 286 parts per billion. The IBM facility in Research Triangle Park is in the process of remediating a groundwater contamination plume of similar contaminants. Through groundwater flow data, and sample analyses data from its network of monitoring wells, IBM presented a reasonable case that the contamination in the private well was not coming from their property.

Offsite inspections were conducted for 6 industries in the vicinity of the private well, namely WECK, Inc., SCM Metal Finishers, Coljohn Mechanic, Niehs, Glidden Paint, and Brunam Service Corporation. The first five companies were located within one-half mile north of the private well, which according to available information would be upgradient. Of these five, two companies should be considered possible sources of the contamination. WECK, Inc. manufactures medical equipment and is listed as a large quantity generator. They generate over 1,200 kilograms per month of 1, 1, 1-Trichloroethane and are located on property adjacent to that of the contaminated private well. RCRA file information does not indicate that WECK has ever had any spills, and the offsite inspection of the facility gave no indication of poor housekeeping procedures; however, due to its proximity to the well and use of large amounts of 1, 1, 1-Trichloroethane, further investigation at WECK is warranted.

SCM Metal Finishers manufactures metal powders. It is not known what chemicals SCM uses in their process; they are not a RCRA facility. However, 1, 1, 1-Trichloroethane is often used in metal degreasing operations. Questionable housekeeping procedures were noted during the offsite recon; in particular, drums were stored on the ground outside and wet surficial soils were noted. Based on this information, SCM Metal Finishers should be investigated further, at least to the extent of determining whether they use chemicals such as 1, 1, 1-Trichloroethane.

Mr. Narindar Kumar  
Environmental Protection Agency  
TDD No. F4-8809-11  
January 10, 1989 - page two

The remaining four companies, Niehs, Glidden Paint, Coljohn Mechanic, and Brunam Service Company (located 1,500 feet to the southeast) did not appear to be likely sources. Niehs is currently an EPA warehouse. Glidden Paint and Coljohn Mechanic did not have any waste storage or disposal areas located outside the building. Brunam Service Company is located downgradient of the contaminated private well. This place appears to be a tractor trailer distribution center.

Geologic information that would be useful for more detailed investigations of groundwater flow in the area can be found in the IBM file, EPA ID No. NCD041463761, TDD No. F4-8804-25, which discusses IBM's monitoring and remediation program. Another source is a detailed geologic map of the area by Hoffmann, Gallagher, which is not yet available for publication, but is on display at the North Carolina Geologic Survey office in Raleigh. The private well, WECK, Inc., and possibly SCM Metal Finishers are underlain by a diabase sill, according to this map. Since the fractured diabase dikes and sills are permeable and act as conduits for groundwater movement, this information may be of relevance.

Two sites in Durham were also investigated as potential additions to the CERCLIS list. Major Chemical Company was inspected. During this offsite inspection, employees were observed washing drums and dumping the rinse water into the back parking lot. It is not known whether these drums contained any hazardous substances. In an attempt to collect more information on Major Chemical, state authorities were contacted. Major Chemical is not a RCRA facility, and the state had no information on the company. Larry Perry, the state field inspector for the Durham area, was contacted. He had no records of the company, but said he would take a look at this facility the next time he was in the area and then contact me. This information will be forwarded to EPA.

The other additional potential site was discovered while conducting research at Duke University. While passing a power substation, a large number of transformers were observed being stored on a concrete pad adjacent to the substation. The pad had a 6-inch high curb around it, and none of the transformers had visible leaks in them.

Enclosed are site discovery forms for all the aforementioned sites. File information and photographs are contained in the file for Airco Industrial Gases (NCD084172469, TDD No. F4-8809-11), one of the Preliminary Reassessments completed in Research Triangle Park. Project hours to complete this site discovery work were charged to the TDD for Airco Industrial Gases. Fifty-three hours were billed to complete this project. If you have any questions or comments, please contact me at NUS.

Very truly yours,

*Phillip Henderson*

Phillip Henderson  
Project Manager

PH/kw

Enclosures (      )

cc: Robert Morris

Approved:

*Robert Morris*